



ROUTE CONCEPT REPORT



STATE ROUTE 22

GARDEN GROVE FREEWAY

07-LA-PM 0.00/1.47

12-ORA PM 0.00 / R13.16

PREPARED BY DISTRICT 12, DIVISION OF PLANNING

DECEMBER 1996



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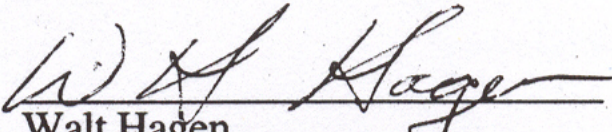
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Date 1/29/97


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LOCATION MAP



DISTRICT 12 ORANGE COUNTY HIGHWAY SYSTEM

LEGEND

- INTERSTATE ROUTE
- STATE SIGN ROUTE
- EXISTING FACILITIES
 - FREEWAY
 - EXPRESSWAY
 - CONVENTIONAL HWYS.
 - SECONDARY ROADS
 - UNDER CONSTRUCTION
- PROPOSED FACILITIES*
 - ROUTE ADOPTED
 - ROUTE UNDER STUDY**
 - ROUTE NOT ADOPTED**

*may be freeway or toll facility

**exact location not determined



CALIFORNIA DEPARTMENT OF TRANSPORTATION

12/96

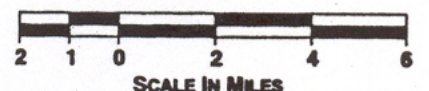


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ROUTE CONCEPT REPORT

STATEMENT OF PLANNING INTENT

The Route Concept Report (RCR) is an internal planning document which expresses the Department's judgment on what the characteristics of each state highway should be in response to proposed land uses and projected travel demand over a 20-year planning period. Route Concept Reports are prepared in the districts and represent the combined expertise of district, local and regional agencies staff.

The RCR contains the Department's goals for the development of each route in terms of Level of Service (LOS). It broadly identifies the nature and extent of improvements needed to reach those goals. More specific design and operational detail will be included and analyzed in subsequent project development documents such as Project Study Reports, Environmental Documents, Project Reports and Preliminary and Final Design. RCRs are used in the development of the District System Management Plan and other state and local planning and project development documents. For purposes of this report, projects under construction are included as completed.

The Concept LOS for this report is based on the ratio of year 2015 forecast volume to facility capacity for each segment of the roadway. The LOS shown in Table 4 is for peak hour/peak direction. *See Appendix 1, Graphic Representation and Definition of Levels of Service.*

In developing this RCR, the System Planning Branch considered using the metric system for designating segment limits and other significant points along this route. It was decided that it would be inappropriate for System Planning to perform even "soft conversions" at this point in the planning process. System Planning will begin using the metric system in the RCR and other System Planning documents when the postmile system is converted and standard set of data is in use throughout the District.

Information contained in the RCR is subject to change as conditions and priorities change and as new information is obtained. The nature and size of identified improvements may change as they move through the project development stages, with final determinations made at the time of project planning and design. Changes that occur during project development may require revision of the RCR.

Preparation of this report included field reviews, review of planned and programmed projects, review of previous RCRs prepared for this route, projects under construction, and analysis of Level of Service. Internal documents from Traffic, Maintenance, Project Development and Programming, and external documents from the Orange County Environmental Management Agency (OCEMA), Orange County Transportation Authority (OCTA), Southern California Association of Governments (SCAG) were referenced for this RCR. Extensive coordination with the Advanced Planning/Intergovernmental Review Branch was also undertaken to ensure consideration of external issues impacting this route.

ROUTE DESCRIPTION - STATE ROUTE 22 (SR-22)

SR-22 is an east-west route which extends 14.7 miles from southeastern Los Angeles County to central Orange County (Figure 1 Location Map). The initial portions of the route in Los Angeles County (P.M. 0.0/1.47) originates at State Route 1 (SR-1) known as Pacific Coast Highway (PCH) and Seventh Street in Long Beach which is also SR-22. This portion of the route operates as a conventional highway and is under the jurisdiction of Caltrans District 7. The remaining 13.2 miles are in Orange County, and end at State Route 55 (SR-55) also known as Costa Mesa Freeway, in the City of Orange. This portion of the route operates as a controlled access freeway. The Caltrans District 12 Route Concept Report for SR-22 includes the 1.47 mile section in Los Angeles County.

The entire SR-22 is located in an urban setting with relatively flat terrain. It passes through 2 counties and 6 cities: Long Beach, Seal Beach, Garden Grove, Westminster, Santa Ana and Orange, and several unincorporated areas in Orange County.

History

SR-22 between Studebaker Road and SR-55 was originally added to the State Highway System as Route 179 in 1933, and then, was added to the State Freeway and Expressway System in 1959. Between January 1964 and April 1967, portions of SR-22 between Studebaker Road and SR-55 were constructed and completed as 6-lane freeway.

In August 1980, the auxiliary lanes were completed eastbound from The City Drive to I-5/SR-57 interchange (P.M. R9.73/R10.48) reducing the median to 6-feet. In July 1986, the auxiliary lanes were completed westbound from Brookhurst Street to Bristol Street (P.M. R5.82/R10.16) between on- and off-ramps.

CURRENT ISSUES/PROBLEM IDENTIFICATION

Los Angeles County

As noted in Caltrans District 7 SR-22 1986 Route Concept Report (RCR), the conventional highway portion would continue to operate at LOS "F" near California State University, Long Beach. In that previous report, City of Long Beach has requested an investigation of this area, also known as the "Iron Triangle" (7th Street/SR-22 in Los Angeles/Bellflower Boulevard/SR-1), to evaluate its potential for grade separation to reduce congestion. In the 1991 RCR for SR-1 prepared by Caltrans District 7, the "Iron Triangle" grade separation was not included although, it was mentioned in the draft stage in June 1988. This concept of grade separation in the "Iron Triangle" will be considered when Caltrans District 7 Staff update their RCR for SR-1.

According to the present General Plan of City of Long Beach, there are planned improvements in that area. At this time, there is no known feasibility study being done by the city and/or Caltrans District 7. There are two or three business establishments in the triangle area.

SR-22/I-405/I-605 Interchange

With the existing HOV lanes on I-405 and the programming of project for 2 HOV lanes on I-605 (from I-405 to I-105), weaving conflicts would increase in the mixed flow lanes to and from each direction of I-405 and I-605. There is a safety issue due to the extensive weaving patterns at the I-405/I-605/SR-22 interchange. If continuity between HOV lanes is disregarded then it would cause a break in the HOV system between the counties and freeways. This effect would defeat the purpose of providing HOV lanes which is to provide a smooth and speedy flow for HOV users. Therefore, it is recommended to investigate the feasibility of adding HOV direct connectors at I-605/I-405 interchange in both directions, northbound and southbound.

The City Drive, I-5 and SR-57 Ramps

Daily congestion occurs in both directions of SR-22 between The City Drive and I-5/SR-57 (P.M. R9.73/R 10.48) during the AM/PM peak periods. The increase in congestion is due to I-5 widening and improvements to I-5/SR-22/SR-57 interchange. The current construction projects on I-5 will continue to impact travel demand on SR-22 in the I-5/SR-22/SR-57 interchange area. There is a need to investigate the feasibility of braiding high volume ramps where weave deficiency may exist at the I-5/SR-57. Also, there is a need to investigate a possible redesign of the horseshoe from eastbound SR-22 to northbound SR-57.

The proximity of 2 westbound on-ramps, I-5 and SR-57, and the westbound The City Drive off-ramp creates weaving conflict that affects the capacity level in this segment. There is a proposal to move The City Drive off-ramp further west. A Project Study Report (PSR)/Project Report for SR-22 Freeway/The City Drive Interchange in City of Orange is currently being developed. This report would investigate the best operational service and eliminate the high weave patterns that exist in that vicinity. Continue working with the city and local developers to improve connection on The City Drive off-ramp.

SR-55/SR-22/Chapman Avenue Interchange

The proximity of the eastbound SR-22 branch connectors to northbound SR-55, and Chapman Avenue off-ramps on the SR-55 creates a weaving conflict causing heavy backup on the eastbound SR-22 during the PM peak period. There is a need to investigate the feasibility of separating the weave movement from eastbound SR-22 to northbound SR-55 and to the Chapman Avenue interchange. Also, there is a need to investigate the feasibility of adding HOV direct connectors in both directions of the SR-22 at SR-22/SR-55 interchange to eliminate weaving movement of HOV users on SR-55 thus, avoiding delay in travel time.

SR-22 Extension

As noted in the 1986 RCR, there was a study (in the inception stage) to connect SR-22 to the Foothill/Eastern Transportation Corridor (SR-241) conducted by Orange County Transportation Commission (OCTC). In 1989, OCTC determined that the study to connect SR-22 to SR-241 was not politically feasible at that time. The connection would relieve traffic congestion on portions of I-5 and SR-55. This concept should be revisited sometime in the future.

Garden Grove Boulevard

Before the freeway was built, Garden Grove Boulevard was the state highway. At this time, there is part of the Garden Grove Boulevard that is the unrelinquished section of SR-22. The one-fourth mile unrelinquished portion is located between Beach Boulevard (SR-39) and Fern Street (P.M. 3.34/3.7) in Garden Grove Boulevard. It is in the process of being relinquished to the Cities of Stanton and Garden Grove.

Funding and Phasing of Projects

At this time, there is an approved Project Study Report (PSR) Route 22 HOV and General Purpose Lane Improvements Final Report dated August 1989. Although, the report provided improvement alternatives, there was no alternative programmed for funding. Under today's rules, a Major Investment Study (MIS) will be required.

In the 2020 Orange County Transportation Vision (2020 Vision) dated February 1994, the inclusion of the SR-22 widening project is in the Tier III List of Projects (Tier I being the highest priority). However, just recently, OCTA has considered moving up the SR-22 widening project on the list. OCTA is now in the process of contracting out the development of documents needed such as MIS, Project Report and Environmental Document for the proposed widening of SR-22 between I-405 and SR-55. It is anticipated that these reports will be available in a couple of years in which then, will seek STIP funding for the proposed project.

Other Issues

In addition to the current issues previously mentioned, there are other concerns that need to be considered. There are inadequate traffic system management and monitoring systems throughout the route. Also, there is a need to develop more aggressive Park and Ride facilities for proposed improvements to increase ridesharing and transit services along the route.

ROUTE PURPOSE AND CLASSIFICATION

SR-22 is a major regional and local commuter route, and a goods movement route. SR-22 serves inter-urban trips between cities within Orange County and to employment centers in Los Angeles County. The route serves as a regional connection to (State Routes) SR 55 and 57, and Interstates (I) 5, 405 and 605. Even with the proximity of SR-22 to Long Beach Harbor, SR-22 is not considered a major goods movement facility into and out of Los Angeles and Orange Counties. On weekends and holidays, this route may carry some significant amount of recreational trips especially, around the Orange Crush area at the I-5/SR-57/SR-22 interchange.

Federal/State Functional Classification

SR-22 is classified as Other Freeway or Expressway (P1P) throughout Los Angeles and Orange Counties. The following are other designations which may affect planning and/or operations on SR-22.

<u>DESIGNATION</u>	<u>LIMITS</u>
• National Highway System (NHS)	R0.66 /R13.16 (near Westminster from east junction I-405 to SR-55)
• National Network for STAA Trucks	R0.66/R13.16 (east I-405 junction to SR-55)
• Terminal Access Route to the National Network	L.A. 0.00/ORR R0.66 (SR-1 to east I-405 junction)
• 12 Foot Wide Arterial System	L.A. 0.00/ORR R13.16 (SR-1 to SR-55)

County Classification

SR-22 in Orange County is shown as a State Freeway in the County Master Plan of Arterial Highways (MPAH). The MPAH identifies state freeways for reference purposes only.

ROUTE ANALYSIS

SR-22 in Los Angeles is a 6 lane conventional highway in the City of Long Beach in Los Angeles County. The conventional highway extends from SR-1 to the Orange County line. The route in Orange County is an access controlled freeway for its entire length. The route is a 6 lane freeway between I-405 and SR-55 with auxiliary lanes in selected portions of the route.

There are five freeway-to-freeway interchanges along this route: I-405, I-605, I-5, SR-57 and SR-55. There are two State conventional highway interchanges: SR-1 in the City of Long Beach in Los Angeles County, and SR-39, known as Beach Boulevard in the Cities of Garden Grove and Westminster.

The eastbound and westbound roadway of SR-22 varies from 24 to 59 feet, and the shoulders vary from: the outside from 0-10 feet and the inside from 0 to 8 feet. There are 29 freeway on-ramps, all currently metered. There are 18 HOV by-pass lanes at on-ramps where right of way and operational characteristics allow.

Parallel Alternative Facilities

SR-22 is part of the existing urban grid of arterial highways and freeways in southeastern portion of Los Angeles County and western half portion of Orange County. There are several existing parallel facilities. The parallel freeway alternative to the north is SR-91 also known as Artesia/Riverside Freeway and to the south is I-405. The main parallel arterial highways in Orange County are: to the north, Trask Avenue, Garden Grove Boulevard, Chapman Avenue, Katella Avenue/Willow Street and Ball Road, and to the south, Westminster Avenue/17th Street, Bolsa Avenue/1st Street and McFadden Avenue.

Land Use

For transportation planning purposes, Orange County is considered to be a fully urbanized county. The county is a continuation of the greater Los Angeles metropolitan area with the Pacific Ocean to the west, the Cleveland National Forest to the east and Camp Pendleton Marine Corps Base to the south. The majority of the land in the county not within or adjacent to the boundaries of the national forest is developed. The primary land use is residential, with pockets of retail commercial, light industrial and professional office space. Industrial and commercial uses usually border freeways and major arterials.

For the purposes of this report, the county is roughly divided into north and south by SR-55 from Newport Beach to Chapman Avenue in Orange. The dividing line then turns east on Chapman Avenue to Santiago Canyon Road east to Silverado Canyon Road east to the Orange/Riverside County Line. North County lies west of SR-55 and north of Santiago Canyon Road and Silverado Canyon Road. In this older portion of the county, most of the street system is based on an arterial grid. South County lies South of Santiago Canyon Road and Silverado Canyon Road and east of SR-55. South County contains much more new development and the street pattern meanders with the contours of the land. *See Exhibit 1 Orange County - North/South Split.*

Based on the 1990 census, the population of Orange County is approximately 2.4 million. By the year 2015, the population is expected to grow to approximately 3.2 million (a 33% increase) with 46% of the increase in the north. Given these numbers, the county population distribution in 2015 is projected to be 66% in the north and 34% in the south. Although the majority of growth is expected to occur in the south, the north will continue to be the more populous area of the county. *See Table 1 Population Growth/Distribution - 2015.*

Based on the 1990 census, the Orange County job base is approximately 1.3 million. By the year 2015, the job base is expected to grow to approximately 2 million (a 54% increase) with 49% of the increase in the north. Given these numbers, the county job base distribution in 2015 is projected to be 60% in the north and 40% in the south. As with the population projections, the majority of growth is expected to occur in the south, yet the north will continue to have a higher concentration of jobs. *See Table 1 Population Growth/Distribution - 2015.* According to the TravelTip User Needs Assessment, South County employment growth is expected in and near the Irvine Spectrum, near the Interstate 5 and Interstate 405 interchange.

TABLE 1
Population Growth/Distribution - 2015

	1990 Total	% in North County	% in South County	2015 Total	% in North County	% in South County
Population	2.4 mil	71%	29%	3.2 mil	66%	34%
Employment	1.3 mil	66%	34%	2.0 mil	60%	40%

The land use along the corridor is predominantly low to medium residential with strip commercial/retail and military use. Currently, there are three major proposed projects that may impact the LOS on SR-22: in the western portion of the route, the Bixby Old Ranch Golf Course Development Plan, and in central portion, are the Disneyland Expansion and The City Center Mills.

The route serves as major commuter route to and from Los Angeles, Riverside and San Bernardino and within Orange counties for north Orange County residents and businesses. There are traffic generators in the vicinity of SR-22 which should be noted. The following is a list of some of the major traffic generators:

- California State University Long Beach
- Veterans Affairs Medical Center in Long Beach
- US Naval Weapons Station in Seal Beach
- Los Alamitos Racetrack in Los Alamitos (approximately 1.5 mile north of SR-22)
- Naval Armed Forces Reserve Center in Los Alamitos
- Disneyland in Anaheim (approximately 2.5 miles north of SR-22)
- Anaheim Convention Center
- Theo Lacy Facility in Orange
- UC Irvine Medical Center in Orange
- Anaheim Stadium (approximately 1 mile north of SR-22)
- Anaheim Arena Arrowhead Pond
- Mainplace Mall in Santa Ana
- Children's Hospital of Orange County in Orange
- St. Joseph Hospital in Orange
- Chapman University in Orange
- and several retail and industrial parks scattered along the route.

The growth forecasts for this report are based on Southern California Association of Governments (SCAG) 2015 forecasts. Much of the population and employment growth will come from recycling existing land to higher densities. To the east limits of this route, in Orange and Riverside counties, the increasing population will continue to generate new traffic.

Route Concept County North/South Split

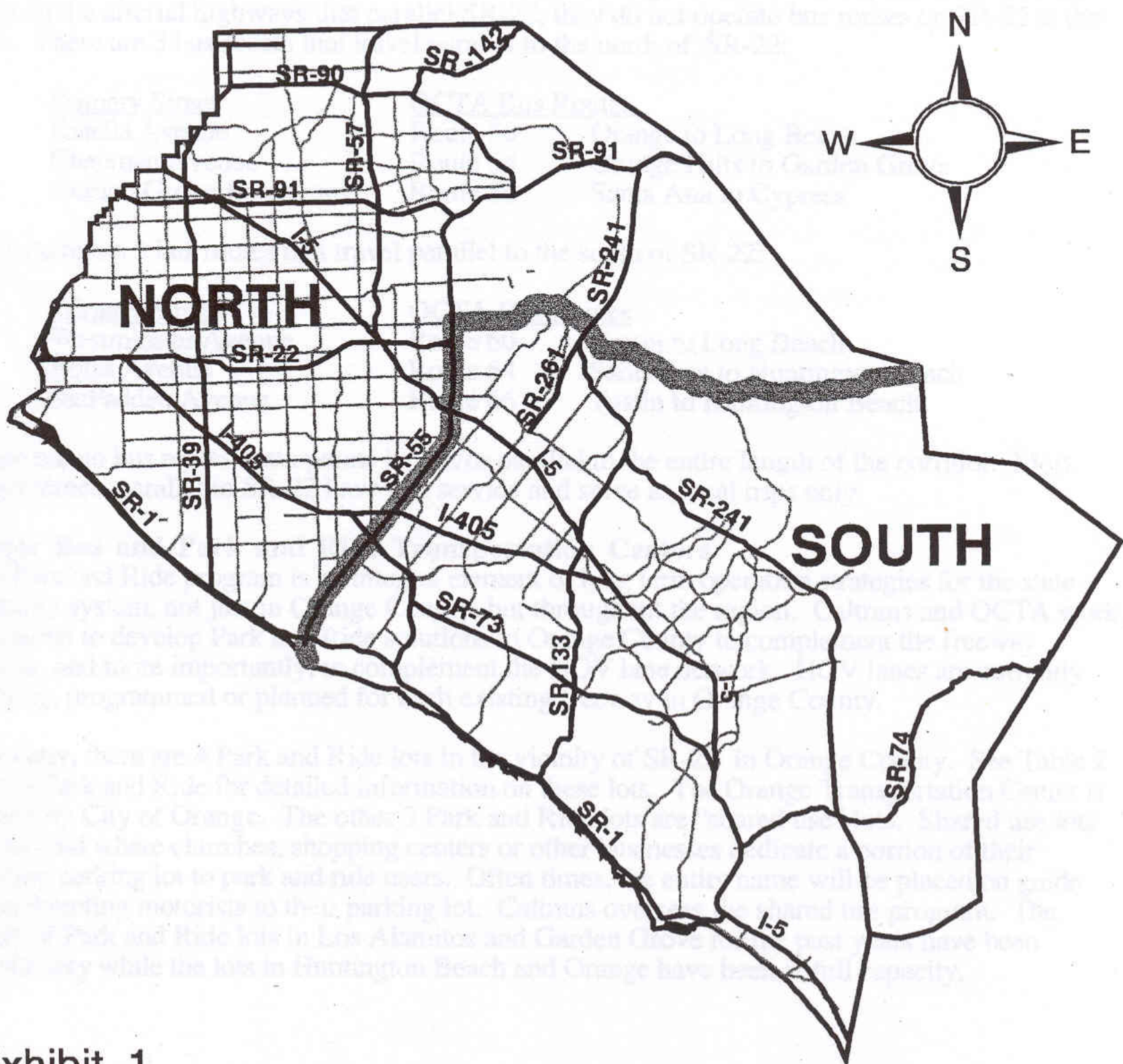


Exhibit 1

Bus

There are two public bus operators that provide services along the SR-22 corridor: Long Beach Transit (LBT) and Orange County Transportation Authority (OCTA). Long Beach Transit, which only operates on the conventional highway portion of the SR-22 in Los Angeles County, has 7 bus routes that travel a short stretch of SR-22 in Long Beach:

LBT Bus Routes

41	Downtown Civic Center to Palo Verde Avenue
42	Pacific Place to Atherton Street
91	Transit Mall to State University Drive
92	Transit Mall to Bellflower Boulevard
93	Woodruff Avenue to Alondra Boulevard
94	Transit Mall to Los Altos Shopping Center
171	Santa Fe Avenue to Main Street

OCTA is the primary bus transit provider in Orange County. While OCTA operates several bus lines on the arterial highways that parallel SR-22, they do not operate bus routes on SR-22 at this time. There are 3 bus routes that travel parallel to the north of SR-22:

Primary Street

Katella Avenue

Chapman Avenue

Garden Grove Boulevard

OCTA Bus Routes

Route 50

Orange to Long Beach

Route 54

Orange Hills to Garden Grove

Route 56

Santa Ana to Cypress

And, there are 3 bus routes that travel parallel to the south of SR-22:

Primary Street

Westminster Avenue

Bolsa Avenue

McFadden Avenue

OCTA Bus Routes

Route 60

Tustin to Long Beach

Route 64

Santa Ana to Huntington Beach

Route 66

Tustin to Huntington Beach.

There are no bus routes that operate in and/or parallel to the entire length of the corridor. Most major streets parallel to SR-22 have bus service and serve as local trips only.

Major Bus and Park and Ride Transportation Centers

The Park and Ride program is an integral element of long term operation strategies for the state highway system, not just in Orange County, but throughout the region. Caltrans and OCTA work in concert to develop Park and Ride solutions in Orange County to complement the freeway system, and more importantly, to complement the HOV lane network. HOV lanes are currently existing, programmed or planned for each existing freeway in Orange County.

Currently, there are 4 Park and Ride lots in the vicinity of SR-22 in Orange County. See Table 2 List of Park and Ride for detailed information on these lots. The Orange Transportation Center is owned by City of Orange. The other 3 Park and Ride lots are "shared use" lots. Shared use lots are located where churches, shopping centers or other businesses dedicate a portion of their existing parking lot to park and ride users. Often times, the entity name will be placed on guide signs directing motorists to their parking lot. Caltrans oversees the shared use program. The usage of Park and Ride lots in Los Alamitos and Garden Grove for the past years have been satisfactory while the lots in Huntington Beach and Orange have been at full capacity.

TABLE 2
List of Park and Ride Lots

Name of Park and Ride Lot	Location	No. of Spaces
Federal Southwest Regional Lab	4665 Lampson Avenue in Los Alamitos	66
McDonnell Douglas Corporation	Bolsa Chica and Skylab West in Huntington Beach	30
Church of the Nazarene	13411 Euclid Avenue in Garden Grove	30
Orange Transportation Center	Atchison Street at Chapman Street in Orange	115

Bicycle Facilities

Bicycles are permitted only on the conventional highway portion of SR-22. There is a Class II bike lane on the westbound SR-22 between West Campus Drive and Bellflower Boulevard. This bike lane acts as a gap closure route.

There are parallel bikeways along the route: Class I bikeway adjacent to eastbound SR-22 between Studebaker Road and Seal Beach Boulevard, and Class II bikeway near the Los Alamitos Naval Air Station in Lampson Avenue and ends at Western Avenue. *See Appendix 4 Bikeway Classifications.*

Rail

SR-22 crosses over OCTA tracks used by Metrolink and Amtrak. There are 3 rail services currently in operation: Los Angeles-Oceanside, San Bernardino-Irvine commuter and Amtrak Los Angeles-San Diego intercity. The nearest rail stations are Anaheim Stadium, which is approximately 1.5 miles north, and Orange, which is approximately 1 mile northeast. *See Exhibit 2 Metrolink System Map.*



TRAFFIC ANALYSIS

Introduction

SR-22 is a major highway providing west-east interregional access between cities in Los Angeles and Orange Counties. During the week, this route is a heavily used commuter route which provides direct and indirect access to employment/business centers, universities and medical centers. On weekends and special events, substantial traffic volumes and congestion also occur ere in the SR-22/I-405/I-605 interchange and in the Orange Crush area at the SR-22/I-5/SR-57 interchange.

The existing two-way average daily traffic (ADT) in the conventional highway portion of the route ranges 55,000 to 60,000 between SR-1 and Studebaker Road (L.A. 0.00/L.A. 1.14). The existing two-way ADT ranges from 94,000 to 206,000 between Studebaker Road and SR-55 (L.A. 1.14/ ORA R13.16).

Average Daily Traffic

The ADT Summary Sheet for SR-22 follows as *Table 4 ADT Summary Table*. There are three time frames given for this information: Existing, Year 2015 Null (Do Nothing), and Year 2015 Concept. The existing data was collected from the 1994 Traffic Volumes On California State Highways book and from the Los Angeles Regional Transportation Study (LARTS) base year forecast. Other sources of information used for existing volumes include: count stations and other information taken from previously completed environmental documents and project related studies.

The future traffic data presented in this document is a product of the LARTS transportation model. The LARTS model simulates the interaction between socio-economic factors and the transportation system. The LARTS model is a socio-economic driven transportation model. Among existing and projected socio-economic variables used in the development of the LARTS model are: population, employment, income, highway transportation system, and transit service (includes rail service). *Table 3 Socio-Economic Data* shows numbers for population, housing and employment for Orange County and the SCAG Region.

The Southern California Association of Governments (SCAG), in cooperation with state and local county governments (Los Angeles, Orange, Riverside, San Bernardino, Ventura, and Imperial) prepared the socio-economic forecast for the year 2015. In June 1994, SCAG completed the Regional Mobility Element (RME), the long range transportation plan for the SCAG Region. The inputs used in the traffic forecast for this RCR are identical to SCAG's 1994 RME. The following table provides a summary of the socio-economic variable inputs for the year 2015 at the county and the regional level.

TABLE 3
Socio-Economic Data - Orange County Region

Socio-Economic Data	Year 2015 Orange County	Year 2015 LARTS *
Population	3,179,197	20,235,306
Housing	1,087,809	7,093,471
Employment	2,005,651	9,804,758

* Los Angeles, Orange, Ventura, and Metropolitan portions of Riverside and San Bernardino counties.

ADT SUMMARY TABLE

Table 4

			EXISTING					
SEG	PM	LIMITS	ADT	# OF LANES	PK HR PK DIR VOL	PK HR PK DIR LOS	EB	WB
I	LA 0.00/LA 1.14	SR-1 to Studebaker Road	60,000	6	2,390	2,350	1.06/F0	1.04/F0
II	LA 1.14/ORA R0.65	Studebaker Road to West Junction I-405 (next segment starts at R0.66)	94,000	4	3,280	3,150	0.82/D	0.79/D
Break in Route (See I-405 RCR)								
III	ORA R0.66/R4.81	East Junction I-405 to Magnolia Street	156,000	6	6,710	6,760	1.12/F0	1.13/F0
IV	R4.81/R10.48	Magnolia Street to I-5/SR-57 Interchange	206,000	6	8,160	7,990	1.36/F2	1.33/F1
V	R10.48/R13.16	I-5/I-57 Interchange to SR-55 Interchange	159,000	6	7,180	6,680	1.20/F0	1.11/F0

			2015 NULL					
SEG	PM	LIMITS	ADT	# OF LANES	PK HR PK DIR VOL	PK HR PK DIR LOS	EB	WB
I	LA 0.00/LA 1.14	SR-1 to Studebaker Road	77,000	6	3,030	2,910	1.35/F1	1.29/F1
II	LA 1.14/ORA R0.65	Studebaker Road to West Junction I-405 (next segment starts at R0.66)	100,000	4	3,370	3,220	0.84/D	0.81/D
Break in Route (See I-405 RCR)								
III	ORA R0.66/R4.81	East Junction I-405 to Magnolia Street	179,000	6	7,180	6,830	1.20/F0	1.14/F0
IV	R4.81/R10.48	Magnolia Street to I-5/SR-57 Interchange	256,000	6	9,710	9,300	1.62/F3	1.55/F3
V	R10.48/R13.16	I-5/I-57 Interchange to SR-55 Interchange	176,000	6	7,730	7,130	1.29/F1	1.19/F0

			2015 CONCEPT					
SEG	PM	LIMITS	ADT	# OF LANES	PK HR PK DIR VOL	PK HR PK DIR LOS	EB	WB
I	LA 0.00/LA 1.14	SR-1 to Studebaker Road	77,000	6	3,030	2,910	1.35/F1	1.29/F1
II	LA 1.14/ORA R0.65	Studebaker Road to West Junction I-405 (next segment starts at R0.66)	100,000	4	3,370	3,220	0.84/D	0.81/D
Break in Route (See I-405 RCR)								
III	ORA R0.66/R4.81	East Junction I-405 to Magnolia Street	189,000	6+2	7,780	7,260	0.97/E	0.91/D
IV	R4.81/R10.48	Magnolia Street to I-5/SR-57 Interchange	260,000	6+2	10,610	9,880	1.33/F1	1.24/F0
V	R10.48/R13.16	I-5/I-57 Interchange to SR-55 Interchange	207,000	6+2	9,530	8,890	1.13/F0	1.11/F0

Goods Movement - Truck Volumes

According to the publication *1994 Annual Average Daily Truck Traffic on the California State Highway System*, the truck percentages range between 2.4% and 8.7%. The lowest truck ADT occurs between SR-1 and west junction I-405 (Segment 1 and Segment 2). The highest truck ADT occurs in the vicinity of east junction I-405 (Segment 3).

Traffic Systems Management

Traffic Systems Management is a strategy for improving mobility on the transportation system without adding capacity. The theory is to implement operational improvements and disseminate motorist information to achieve the maximum operating efficiency of the transportation system. In particular, Caltrans' goal is to develop all freeways in Orange County to Urban Freeway Standards. The integral to this development is the Traffic Operation Systems (TOS) Plan and the system elements outlined in it. *See Appendix 5 Urban Freeway Standards* for an introduction to the TOS Plan and its system elements.

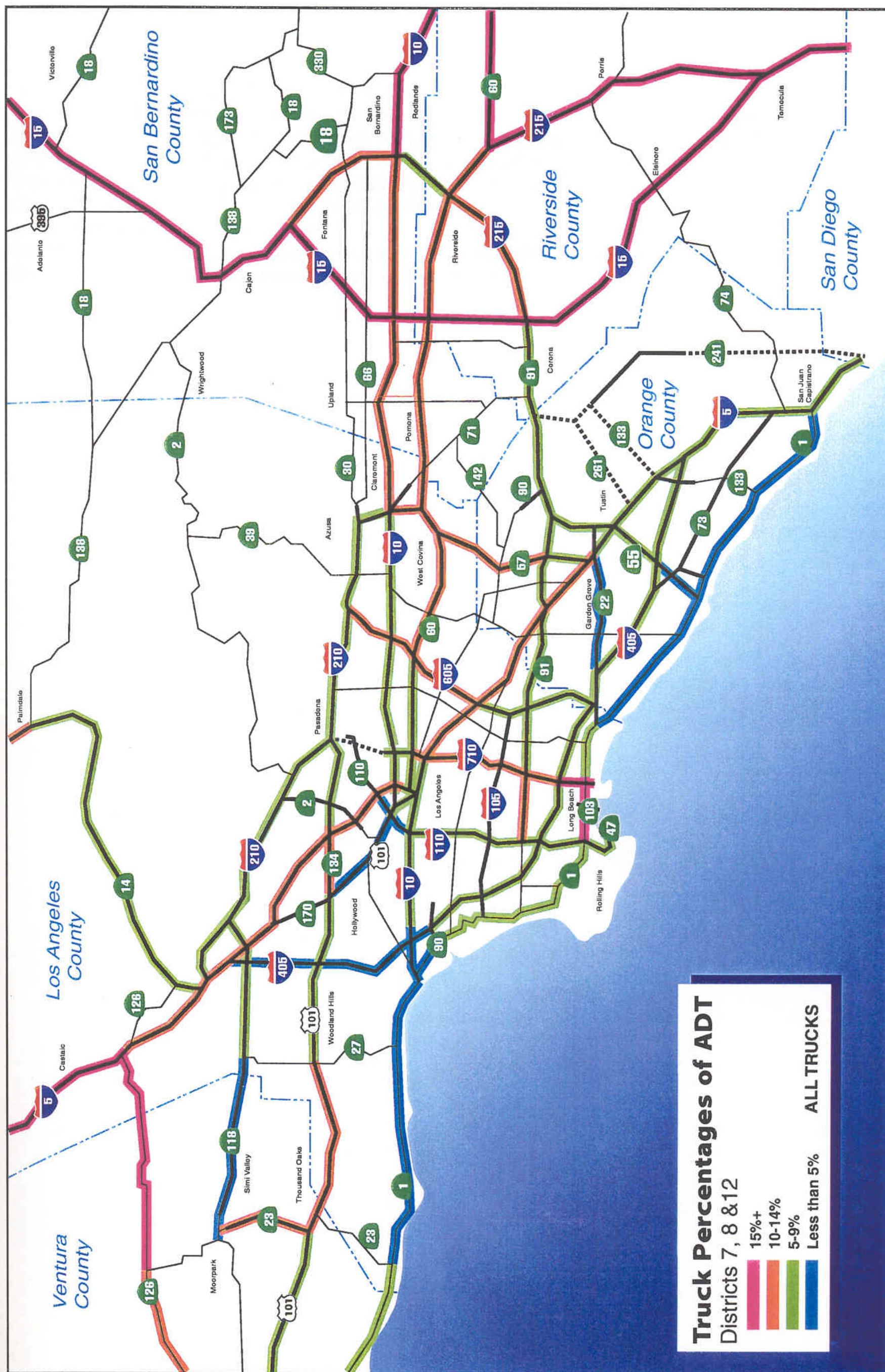
Accident Rates - Automobiles

The accident rate information shown in this report is taken from Table B of the Traffic Accident Surveillance and Analysis System (TASAS). It should be used for general planning purposes and as an indicator of how the accident rate of a particular segment of a route compares to the accident rate averages on similar routes statewide. Higher than average rates described in this report is alone not an indicator that there is a significant problem since accident rates can be greatly influenced by the length of the segment as well as the time period being measured. *See Appendix 3 Accident Rates from TASAS Table B* information on SR-22.

The Accident Surveillance Procedures Manual developed by the Division of Traffic, is used to ensure Caltrans has statewide consistency in identifying safety problem locations and for developing recommended solutions. One tool used in this process is Table C report which lists high accident concentration locations and uses an automated system for flagging locations requiring investigation.

Highway safety is Caltrans number one priority. Identification of safety problem areas is a continuous process. After a safety project is identified, it is prioritized and programmed as soon as possible in either the State Highway Operation and Protection Program (SHOPP) if it is a high cost project, or through the District Minor Program whichever meets the funding criteria. For more detailed information, please refer to the Accident Surveillance Procedure Manual.

As shown in *Appendix 3*, between July 1, 1992 and June 30, 1995, the actual accident rate on each segment of SR-22 is below the average total accident rate.



Graphic Prepared by District 7, Graphic Services 10/92
Orange County Freeways Revised 11/96

MAJOR PROGRAMMED PROJECTS

For this report, major programmed projects are identified as major capacity enhancement and operational improvements projects programmed for construction beginning in State Fiscal Year 96 (FY 96/97) or later. Projects are programmed into one of the three State highway programs: State Transportation Improvement Program (STIP), the State Highway Operations and Protection Plan (SHOPP), and the Traffic Systems Management Program (TSM). Some of these programmed projects may be funded partially or totally by local funding sources. The programmed projects on the SR-22 are: rehabilitation of roadway from PCH to I-605, and the widening of overcrossing at Bolsa Chica Road. There are no capacity enhancement projects programmed at this time.

ROUTE CONCEPT

Introduction

Given the projected increase in traffic demand and limited funding, multimodal solutions to the congestion problem should continue to be implemented and expanded. The concept for SR-22 is to provide the best LOS possible and reduce the duration of congestion expected if improvements are not done. Although the Year 2015 Concept alternative will provide additional capacity on SR-22, some segments will continue to operate at LOS F0 or below.

The route concept for SR-22 is to increase lanes from 6 to 8 between east junction I-405 and SR-55. The determination of the increase is to add HOV lanes in each direction and providing HOV direct connectors at I-405/I-605 and SR-22/SR-55 interchanges. This will expand the "Triangular" network of HOV lanes located on I-405, SR-55, SR-57 and SR-91. The addition of HOV lanes in Orange County will significantly mitigate expected roadway congestion. These lanes will provide incentives for the growth of carpools, thus increasing the corridor's passenger carrying capacity.

The full implementation of Traffic Operation System elements (CCTV, ramp metering, CMS, etc., with tie-in to TMC) is strongly recommended as a means of managing the State Highway System in the urban areas of California. In the interest of cost savings and convenience to the motoring public, these elements should be included in larger construction projects wherever possible. See *Appendix 5 New Technology* and *Appendix 6 Urban Freeway Standards*.

Regional Consistency

The route concept called for in this report is consistent with the 1994 Regional Mobility Element (RME). The RME is the long range regional transportation plan for the six counties in Southern California Region. By law, all projects programmed in the Regional Transportation Improvement Program (RTIP) must be contained in the regional transportation plan and have funding source identified. Most of the major projects already programmed or planned for this route will meet this route concept. All projects currently programmed in the RTIP for SR-22 are contained in the RME, therefore, this concept is consistent with regional planning efforts.

Caltrans and OCTA are in full agreement on the following concept outlined for SR-22. Wherever a project does not meet the route concept, Caltrans will work with OCTA on a structured approach to planning and programming projects that will eventually meet the route concept.

Segment 1 (PM LA 0.00/LA 1.14)

Existing Facility:	Conventional Highway	6 lanes	LOS F0
Concept Facility:	Conventional Highway	6 lanes	LOS F1

This segment operates as 6 lane conventional highway facility located in the City of Long Beach, in Los Angeles County. The operational characteristics of the facility are controlled by traffic signals. There are left and right turn pockets at major intersections. Also, there are bus turnouts in both directions between West Campus Drive and Channel Drive.

This Route Concept Report recommends to revisit the 1986 RCR for SR-22 to further investigate the area called "Iron Triangle" (7th Street/SR-22/Bellflower Boulevard/SR-1). See *CURRENT ISSUES Los Angeles County*. This segment is a candidate route for Secondary State Highway System. As such, it may be necessary to study this segment for relinquishment to the City of Long Beach.

Segment 2 (PM LA 1.14/ORR R0.65)

Existing Facility: Freeway	4 lanes	LOS D
Concept Facility: Freeway	4 lanes	LOS D

This segment operates as 4 lane freeway facility located in the cities of Long Beach and Seal Beach. The Orange County line is located at the San Gabriel River bridge. There is a break in the route at West Junction I-405 (P.M. R0.65) in city of Seal Beach where the roadway is I-405. This Route Concept Report recommends investigating the feasibility of adding HOV direct connectors at I-405/I-605/SR-22 interchange in both directions, northbound and southbound. See *CURRENT ISSUES SR-22/I-SR-22/I-405/I-605 Interchange*.

Segment 3 (PM R0.66/R4.81)

Existing Facility: Freeway	6 lanes	LOS F0
Concept Facility: Freeway	6 lanes + 2 HOV	LOS E

SR-22 resumes at the east junction I-405 (P.M. 0.66) in the city of Garden Grove. This segment operates as 6 lane freeway located in the cities of Westminster, Stanton and Garden Grove. There is an intermittent auxiliary lane in each direction from Beach Boulevard to Magnolia Street. This Route Concept Report recommends adding 1 HOV lane in each direction and auxiliary lanes where feasible.

Segment 4 (PM R4.81/R10.48)

Existing Facility: Freeway	6 lanes	LOS F2
Concept Facility: Freeway	6 lanes + 2 HOV	LOS F1

This segment operates as 6 lane freeway facility located in the cities of Garden Grove, Orange and Santa Ana. There are intermittent auxiliary lanes in both directions.

This Route Concept Report recommends adding 1 HOV lane in each direction and auxiliary lanes where feasible. It also recommends investigating the feasibility of braiding high volume ramps where weave deficiency may exist at the I-5/SR-22/SR-57 interchange. See *CURRENT ISSUES The City Drive, I-5 and SR-57 Interchange*.

Segment 5 (PM R10.48/R13.16)

Existing Facility: Freeway	6 lanes	LOS F0
Concept Facility: Freeway	6 lanes + 2 HOV	LOS F0

This segment operates as 6 lane freeway facility located in the cities of Orange and Santa Ana. There are intermittent auxiliary lanes in both directions.

This Route Concept Report recommends adding 1 HOV lane in each direction and auxiliary lanes where feasible. This report also recommends investigating the feasibility of adding HOV direct connectors at SR-22/SR-55 interchange in both directions. Another recommendation, which is not on the SR-22 facility, is to investigate the feasibility of improving the Chapman Avenue interchange on SR-55 to eliminate the weaving of traffic from eastbound SR-22 to northbound SR-55 and Chapman Avenue on SR-55. See *CURRENT ISSUES SR-55/SR-22/Chapman Avenue Interchange*.

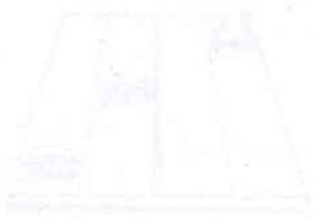
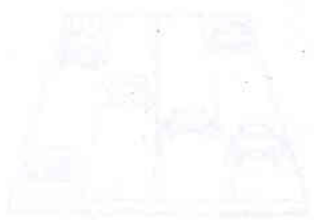


High Occupancy Toll (HOT) Lanes

Caltrans and the regional transportation agencies (including SCAG and OCTA) are studying the implementation of HOT Lanes as a way to maximize the use of existing and proposed HOV lanes. HOT lanes will probably be free to carpools of 3 or more, with a toll charged to lesser occupancy vehicles. SR-22 could be a candidate HOT Lane route.

APPENDICES

APPENDIX I

Graphic Representation and Definition of Degree of Congestion

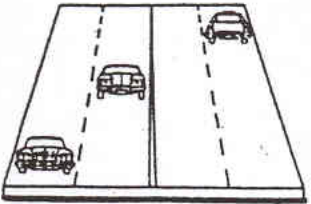
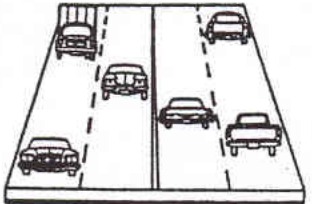
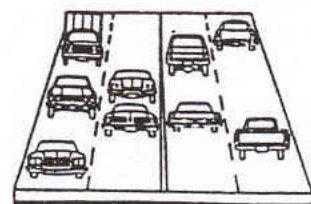
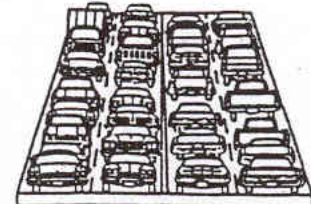
			
A	Single traffic flow, road width 10 ft. (3 m). Low traffic volume, no congestion. (Average 100 vehicles per hour.)		
B	Single traffic flow, road width 15 ft. (4.5 m). Low traffic volume, no congestion. (Average 150 vehicles per hour.)		
C	Single traffic flow, road width 20 ft. (6 m). Low traffic volume, no congestion. (Average 200 vehicles per hour.)		
D	Single traffic flow, road width 25 ft. (7.5 m). Low traffic volume, no congestion. (Average 250 vehicles per hour.)		
E	Double traffic flow, road width 20 ft. (6 m). Low traffic volume, no congestion. (Average 200 vehicles per hour.)		
F	Double traffic flow, road width 25 ft. (7.5 m). Low traffic volume, no congestion. (Average 250 vehicles per hour.)		

LOS	HRS OF CONGESTION
F0	0 - 1 HR
F1	1 - 2 HRS
F2	2 - 3 HRS
F3	> 3 HRS

To reflect the duration of congestion, the LOS F has been expanded into F0, F1, F2 and F3. Each LOS F indicates the time a congested road is in that state.

APPENDIX 1

Graphic Representation and Definition of Levels of Service

 <p style="text-align: center;">A</p>	 <p style="text-align: center;">B</p>	 <p style="text-align: center;">C</p>	 <p style="text-align: center;">F</p>
<p>A Highest quality of service. Free traffic flow, low volumes and densities. Little or no restrictions on maneuverability or speed. 55+ mph. No delay.</p>			
<p>B Stable traffic flow, speed becoming slightly restricted. Low restriction on maneuverability. 50 mph. No delay.</p>			
<p>C Stable traffic flow, but less freedom to select speed, change lanes, or pass. Density increasing. 45 mph. Minimal delay.</p>			
<p>D Speeds tolerable but subject to sudden and considerable variation. 40 mph. Minimal delay.</p>			
<p>E Unstable traffic flow with rapidly fluctuating speeds and flow rates. Short headways, low maneuverability, and low driver comfort. 35 mph. Significant delay.</p>			
<p>F Forced traffic flow. Speed and flow may drop to zero with high densities. Less than 25 mph. Considerable delay.</p>			

LOS	HRS OF CONGESTION
F0	0 - 1 HR
F1	1 - 2 HRS
F2	2 - 3 HRS
F3	> 3 HRS

To reflect the duration of congestion, the LOS F has been expanded into F0, F1, F2 and F3. Each LOS F indicates the time a segment is congested

Segment Summary Pages
Pages A2-4 thru A2-6

State Route 22 LOS - Year 1994

Postmile	Description	No. of Lanes*	ADT	1 Hr Peak		V/C**		V/C		LOS		LOS	
				A.M. (EB)	P.M. (EB)	A.M. (WB)	P.M. (WB)	A.M. (WB)	P.M. (WB)	A.M. (EB)	P.M. (EB)	A.M. (WB)	P.M. (WB)
0.00	Pacific Coast Highway (SR-1)												
0.08	Bellflower Blvd	3	55,000	1,840	1,970	1,930	1,980	0.82	0.88	0.86	0.88	D	D
1.14	Studebaker Rd	3	60,000	1,710	2,390	2,350	1,960	0.76	1.06	1.04	0.87	C	F0
1.47	Los Angeles-Orange County Line	2	94,000	2,800	3,280	3,150	3,070	0.70	0.82	0.79	0.77	C	D
0.00	Los Angeles-Orange County Line											D	C
R0.34	Begin Garden Grove Freeway												
R0.37	Jct. San Gabriel Freeway (I-605) North	2	94,000	2,800	3,280	3,150	3,070	0.70	0.82	0.79	0.77	C	D
R0.65	West Jct. San Diego Freeway (I-405)												
	Break in Route												
R0.66	East Jct. I-405 at Bolsa Chica, resume SR-22												
R2.65	Knott Ave/Golden West St	3	118,000	3,480	5,480	5,810	4,030	0.58	0.91	0.97	0.67	C	D
R3.59	Beach Blvd (SR-39)	3	135,000	4,370	5,830	5,930	4,760	0.73	0.97	0.99	0.79	C	E
R4.81	Magnolia St	3	156,000	5,110	6,710	6,760	5,630	0.85	1.12	1.13	0.94	D	F0
R5.82	Brookhurst St	3	168,000	5,730	6,660	6,410	6,210	0.96	1.11	1.07	1.04	E	F0
R6.81	Euclid St	3	174,000	6,130	6,690	6,450	6,590	1.02	1.12	1.08	1.10	F0	F0
R7.83	Harbor Blvd	3	183,000	6,710	6,980	6,570	6,940	1.12	1.16	1.10	1.16	F0	F0
R8.82	Garden Grove Blvd	3	188,000	6,730	7,170	6,750	7,130	1.12	1.20	1.13	1.19	F0	F0
R9.73	Manchester Ave/The City Dr	3	198,000	7,110	7,510	7,120	7,620	1.19	1.25	1.19	1.27	F0	F0
R10.48	Jct. Santa Ana/Orange Freeways (I-5/SR-57)	3	206,000	6,740	8,160	7,990	7,630	1.12	1.36	1.33	1.27	F0	F1
R10.99	Main St	3	159,000	4,200	7,180	6,650	5,480	0.70	1.20	1.11	0.91	C	F0
R11.83	Glassell St	3	157,000	4,040	7,170	6,680	5,370	0.67	1.20	1.11	0.90	C	F0
R12.87	Tustin Ave	3	146,000	2,460	5,710	5,290	3,590	0.41	0.95	0.88	0.60	B	E
R13.16	Costa Mesa Freeway (SR-55)	3	120,000	2,810	5,780	4,920	3,920	0.47	0.96	0.82	0.65	B	E

* In Each Direction
** Volume to Capacity

State Route 22 LOS - Year 2015 Null

Postmile	Description	No. of Lanes *	ADT	1 Hr Peak		1 Hr Peak		V/C **		V/C		LOS		LOS	
				A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
				(EB)	(WB)	(EB)	(WB)	(EB)	(WB)	(EB)	(WB)	(EB)	(WB)	(EB)	(WB)
0.00	Pacific Coast Highway (SR-1)														
0.08	Bellflower Blvd	3	65,700	2,160	2,340	2,120	2,400	0.96	1.04	0.94	1.07	E	F0	E	F0
1.14	Studebaker Rd	3	76,900	2,280	3,030	2,910	2,540	1.01	1.35	1.29	1.13	F0	F1	F1	F0
1.47	Los Angeles-Orange County Line	2	100,100	3,010	3,370	3,140	3,220	0.75	0.84	0.79	0.81	C	D	D	D
0.00	Los Angeles-Orange County Line														
R0.34	Begin Garden Grove Freeway														
R0.37	Jct. San Gabriel Freeway (I-605) North	2	100,100	3,010	3,370	3,140	3,220	0.75	0.84	0.79	0.81	C	D	D	D
R0.65	West Jct. San Diego Freeway (I-405)														
	Break in Route														
R0.66	East Jct. I-405 at Bolsa Chica, resume-SR-22														
R2.65	Knott Ave/Golden West St	3	127,800	4,330	5,530	4,940	4,810	0.72	0.92	0.82	0.80	C	D	D	D
R3.59	Beach Blvd (SR-39)	3	154,600	5,210	6,430	5,630	5,790	0.87	1.07	0.94	0.97	D	F0	D	E
R4.81	Magnolia St	3	178,600	6,160	7,180	6,310	6,830	1.03	1.20	1.05	1.14	F0	F0	F0	F0
R5.82	Brookhurst St	3	189,100	6,540	7,040	6,310	6,970	1.09	1.17	1.05	1.16	F0	F0	F0	F0
R6.81	Euclid St	3	201,200	7,000	7,270	6,280	7,470	1.17	1.21	1.05	1.25	F0	F0	F0	F0
R7.83	Harbor Blvd	3	221,000	7,850	8,060	6,940	8,440	1.31	1.34	1.16	1.41	F1	F1	F0	F0
R8.82	Garden Grove Blvd	3	226,900	8,060	8,280	7,120	8,660	1.34	1.38	1.19	1.44	F1	F2	F0	F2
R9.73	Manchester Ave/The City Dr	3	241,000	8,330	8,480	7,410	8,860	1.39	1.41	1.24	1.48	F2	F2	F0	F2
R10.48	Jct. Santa Ana/Orange Freeways (I-5/SR-57)	3	255,500	7,490	9,710	9,300	8,920	1.25	1.62	1.55	1.49	F0	F3	F0	F3
R10.99	Main St	3	176,100	4,670	7,730	6,940	6,390	0.78	1.29	1.16	1.07	C	F1	F0	F0
R11.83	Glassell St	3	175,100	4,570	7,570	7,130	6,310	0.76	1.26	1.19	1.05	C	F1	F0	F0
R12.87	Tustin Ave	3	133,500	3,070	6,200	5,930	4,730	0.51	1.03	0.99	0.79	B	F0	E	D
R13.16	Costa Mesa Freeway (SR-55)	3	136,100	3,390	6,110	5,400	4,920	0.57	1.02	0.90	0.82	C	F0	D	D

* In Each Direction
** Volume to Capacity

State Route 22 LOS - Year 2015 Concept

Postmile	Description	No. of Lanes *	ADT	1 Hr Peak		V/C **		LOS		LOS			
				A.M. (EB)	P.M. (EB)	A.M. (WB)	P.M. (WB)	A.M. (EB)	P.M. (EB)	A.M. (WB)	P.M. (WB)		
0.00	Pacific Coast Highway (SR-1)	3	65,700	2,160	2,340	2,120	2,400	0.96	1.04	0.94	1.07	E	F0
0.08	Bellflower Blvd	3	76,900	2,280	3,030	2,910	2,540	1.01	1.35	1.29	1.13	F0	F0
1.14	Studebaker Rd	2	100,100	3,010	3,370	3,140	3,220	0.75	0.84	0.79	0.81	C	D
1.47	Los Angeles-Orange County Line												
0.00	Los Angeles-Orange County Line												
R0.34	Begin Garden Grove Freeway	2	100,100	3,010	3,370	3,140	3,220	0.75	0.84	0.79	0.81	C	D
R0.37	Jct. San Gabriel Freeway (I-605) North												
R0.65	West Jct. San Diego Freeway (I-405)												
	Break in Route												
R0.66	East Jct. I-405 at Bolsa Chica, resume SR-22	4	135,200	4,740	5,870	5,210	5,170	0.59	0.73	0.65	0.65	C	C
R2.65	Knott Ave/Golden West St	4	158,900	5,740	6,950	6,070	6,320	0.72	0.87	0.76	0.79	C	D
R3.59	Beach Blvd (SR-39)	4	189,400	6,670	7,780	6,800	7,260	0.83	0.97	0.85	0.91	D	D
R4.81	Magnolia St	4	214,400	7,930	8,640	7,550	8,520	0.99	1.08	0.94	1.07	E	F0
R5.82	Brookhurst St	4	203,000	7,770	8,070	6,820	8,130	0.97	1.01	0.85	1.02	E	F0
R6.81	Euclid St	4	222,200	8,450	8,700	7,250	8,940	1.06	1.09	0.91	1.12	F0	F0
R7.83	Harbor Blvd	4	228,000	8,630	8,890	7,410	9,140	1.08	1.11	0.93	1.14	F0	F0
R8.82	Garden Grove Blvd	4	244,900	9,240	9,430	7,940	9,730	1.16	1.18	0.99	1.22	F0	F0
R9.73	Manchester Ave/The City Dr	4	260,300	8,000	10,610	9,880	9,450	1.00	1.33	1.24	1.18	E	F0
R10.48	Jct. Santa Ana/Orange Freeways (I-5/SR-57)	4	195,900	4,890	9,040	8,160	6,910	0.61	1.13	1.02	0.86	C	D
R10.99	Main St	4	207,100	5,360	9,530	8,890	7,930	0.67	1.19	1.11	0.99	C	F0
R11.83	Glassell St	4	145,800	3,120	7,400	7,020	5,020	0.39	0.93	0.88	0.63	B	D
R12.87	Tustin Ave	4	145,700	3,310	7,160	6,690	5,010	0.41	0.90	0.84	0.63	B	D
R13.16	Costa Mesa Freeway (SR-55)												

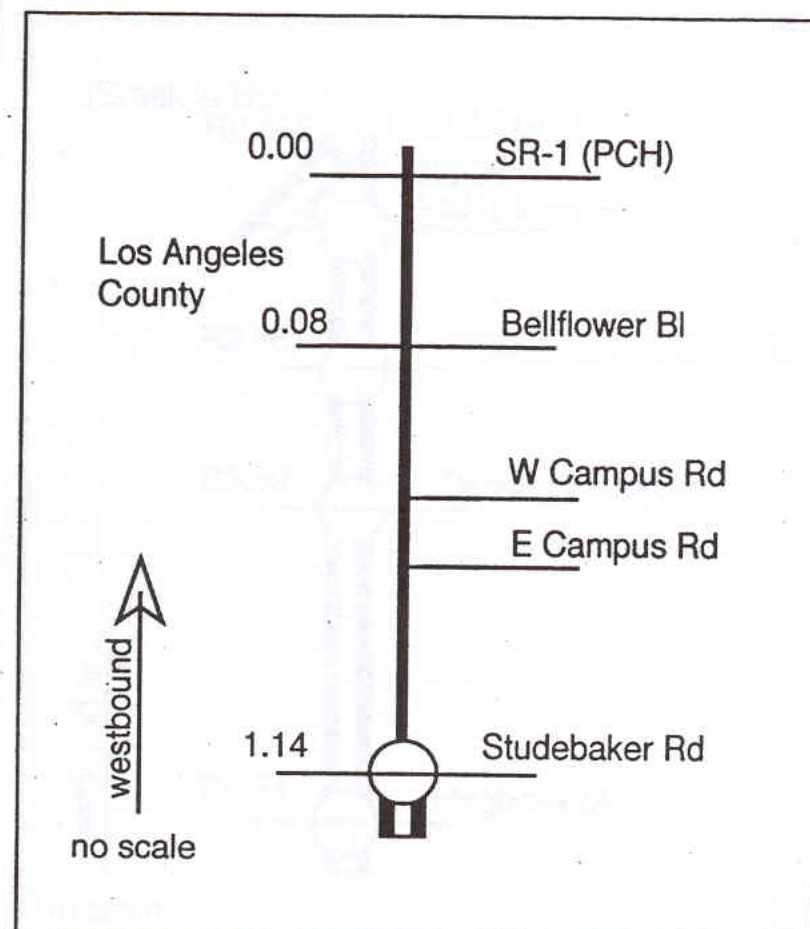
* In Each Direction

** Volume to Capacity

TYPE OF FACILITY:		CONVENTIONAL HWY	
FUNCTIONAL CLASSIFICATION		: Urban - Other Freeway or Expressway	
MPAH DESIGNATION		: none - outside MPAH domain	
OTHER SYSTEMS			
		INSIDE SHLDR: EB 0'-5'/WB 0'-5'	
TRAVELED WAY		EB 24'-36'/WB 24'-36'	BIKEWAY : Class II
OUTSIDE SHLDR		EB 0'-10'/WB 0'-8'	PARKING : NONE

STATE ROUTE 22, SEGMENT # 1
POSTMILE: L.A. 0.0/L.A. 1.14
LIMITS: SR-1 to Studebaker Rd

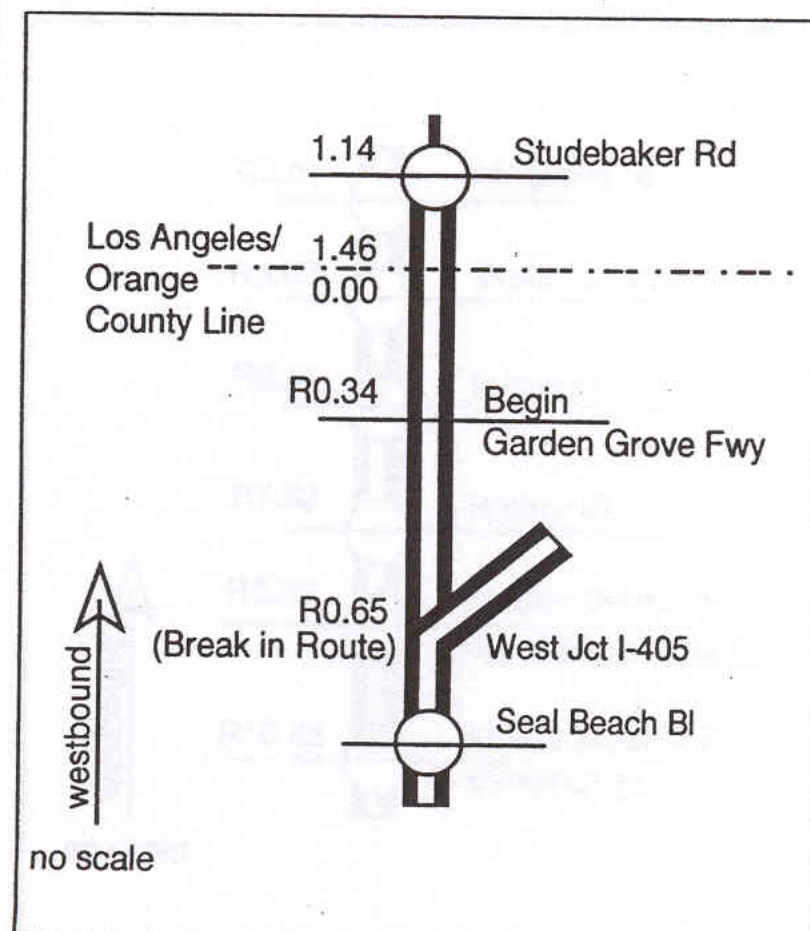
TRAFFIC DATA				
		EXISTING	2015 NULL	2015 CONCEPT
ADT		60,000	77,000	77,000
PK HR	EB	2,390	3,030	3,030
	WB	2,350	2,910	2,910
LOS	EB	1.06/F0	1.35/F1	1.35/F1
	WB	1.04/F0	1.29/F1	1.29/F1
NUMBER OF LANES*	EB	3	3	3
	WB	3	3	3
ACCIDENT RATES PER MILLION VEHICLE MILES				
TASAS DATA: FROM 7-1-92 TO 6-30-95		ACTUAL		AVERAGE
		F+I/MVM	TOT/MVM	F+I/MVM
		0.24	0.60	1.09
				TOT/MVM
				2.40



TYPE OF FACILITY:		FREEWAY	
FUNCTIONAL CLASSIFICATION		: Urban - Other Freeway or Expressway	
MPAH DESIGNATION		: State Freeway (at Orange County Line)	
OTHER SYSTEMS			
		INSIDE SHLDR: EB 0'-5'/WB 0'-5'	
TRAVELED WAY		EB 24'-26'/WB 24'-37'	BIKEWAY : Class I
OUTSIDE SHLDR		EB 0'-8'/WB 0'-8'	PARKING : N/A

STATE ROUTE 22, SEGMENT # 2
POSTMILE: L.A. 1.14/ORA R0.65
LIMITS: Studebaker Rd to West Junction I-405 (break in route)

TRAFFIC DATA				
		EXISTING	2015 NULL	2015 CONCEPT
ADT		94,000	100,000	100,000
PK HR	EB	3,280	3,370	3,370
	WB	3,150	3,220	3,220
LOS	EB	0.82/D	0.84/D	0.84/D
	WB	0.79/D	0.81/D	0.81/D
NUMBER OF LANES*	EB	2	2	2
	WB	2	2	2
ACCIDENT RATES PER MILLION VEHICLE MILES				
TASAS DATA: FROM 7-1-92 TO 6-30-95		ACTUAL		AVERAGE
		F+I/MVM	TOT/MVM	F+I/MVM
		0.22	0.85	0.65
				TOT/MVM
				1.59

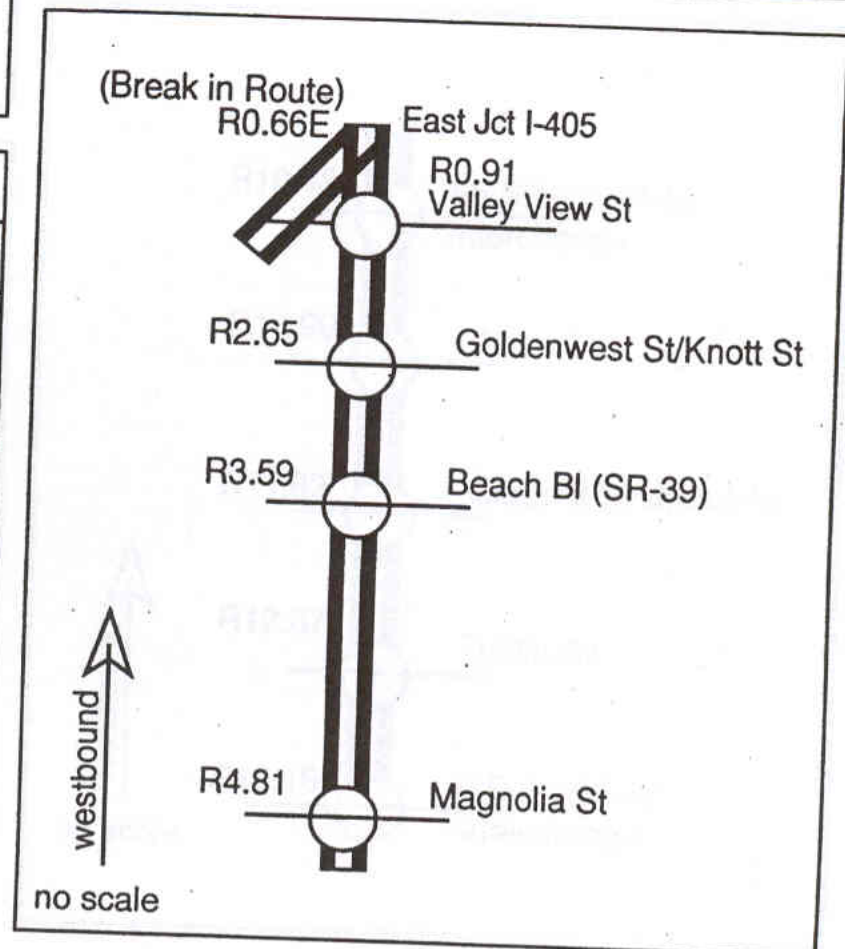


* Number of Lanes = Mixed Flow + HOV

TYPE OF FACILITY:		FREEWAY	
FUNCTIONAL CLASSIFICATION		: Urban - Other Freeway or Expressway	
MPAH DESIGNATION		: State Freeway	
OTHER SYSTEMS		: National Highway System , Nat'l Truck Network	
		INSIDE SHLDR: EB 0'-5'/WB 0'-5'	
TRAVELED WAY		: EB 36'-55'/WB 36'-59'	BIKEWAY : N/A
OUTSIDE SHLDR		: EB 8'/WB 8'	PARKING : N/A

TRAFFIC DATA				
		EXISTING	2015 NULL	2015 CONCEPT
ADT		156,000	179,000	189,000
PK HR	EB	6,710	7,180	7,780
	WB	6,760	6,830	7,260
LOS	EB	1.12/F0	1.20/F0	0.97/E
	WB	1.13/F0	1.14/F0	0.91/D
NUMBER OF LANES*	EB	3(1)	3(1)	3+1(1)
	WB	3(1)	3(1)	3+1(1)
TASAS DATA: FROM 7-1-92 TO 6-30-95	ACCIDENT RATES PER MILLION VEHICLE MILES			
	ACTUAL		AVERAGE	
	F+I/MVM	TOT/MVM	F+I/MVM	TOT/MVM
	0.24	0.79	0.39	1.13

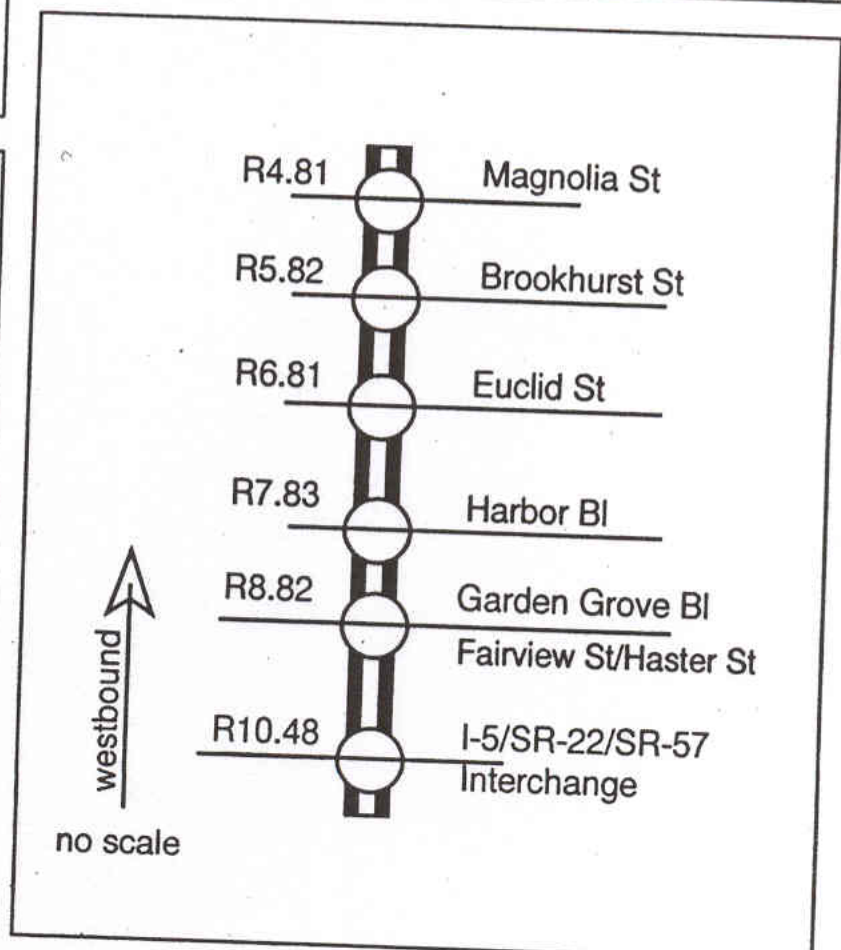
STATE ROUTE 22, SEGMENT # 3
POSTMILE: R0.66E/R4.81
LIMITS: East Junction I-405 to Magnolia St



TYPE OF FACILITY:		FREEWAY	
FUNCTIONAL CLASSIFICATION		: Urban - Other Freeway or Expressway	
MPAH DESIGNATION		: State Freeway	
OTHER SYSTEMS		: National Highway System, Nat'l Truck Network	
		INSIDE SHLDR: EB 2'-5'/WB 0'-5'	
TRAVELED WAY		: EB 36'-57'/WB 36'-59'	BIKEWAY : N/A
OUTSIDE SHLDR		: EB 6'-8'/WB 0'-8'	PARKING : N/A

TRAFFIC DATA				
		EXISTING	2015 NULL	2015 CONCEPT
ADT		206,000	256,000	260,000
PK HR	EB	8,160	9,710	10,610
	WB	7,990	9,300	9,880
LOS	EB	1.36/F2	1.62/F3	1.33/F1
	WB	1.33/F1	1.55/F3	1.24/F0
NUMBER OF LANES*	EB	3(1)	3(1)	3+1(1)
	WB	3(1)	3(1)	3+1(1)
ACCIDENT RATES PER MILLION VEHICLE MILES				
TASAS DATA: FROM 7-1-92 TO 6-30-95	ACTUAL		AVERAGE	
	F+I/MVM	TOT/MVM	F+I/MVM	TOT/MVM
	0.32	1.19	0.46	1.36

STATE ROUTE 22, SEGMENT # 4
POSTMILE: R4.81/R10.48
LIMITS: Magnolia St to I-5/SR-22/SR-57 Interchange

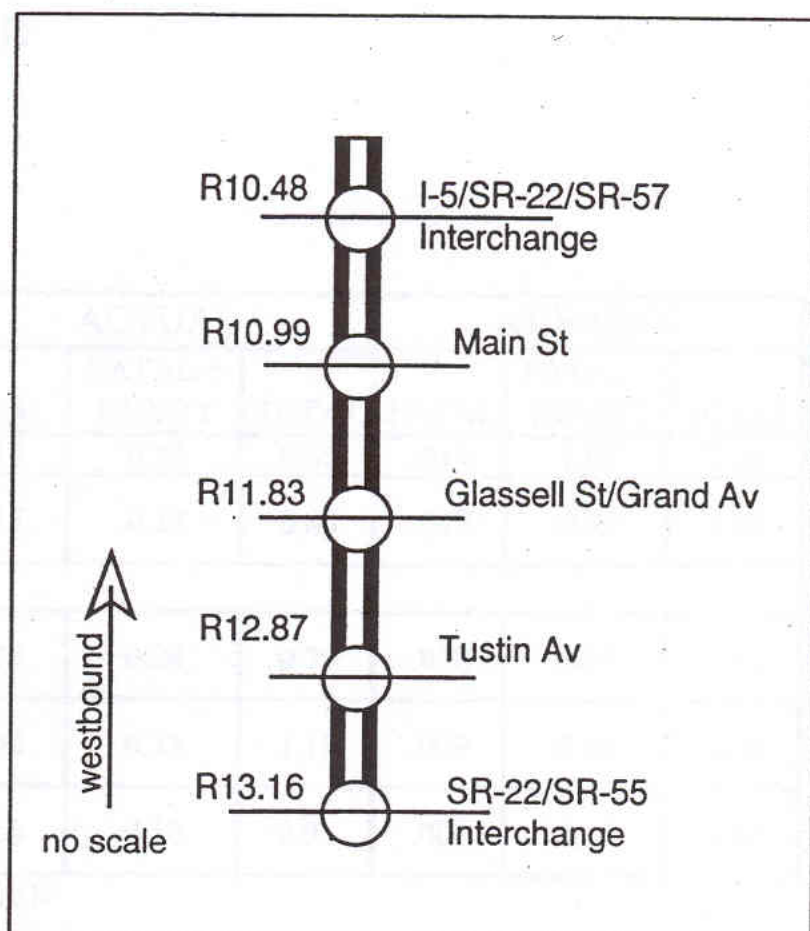


* Number of Lanes = Mixed Flow + HOV (Auxiliary)

TYPE OF FACILITY:	FREEWAY		
FUNCTIONAL CLASSIFICATION	: Urban - Other Freeway or Expressway		
MPAH DESIGNATION	: State Freeway		
OTHER SYSTEMS	: National Highway System, Nat'l Truck Network		
	INSIDE SHLDR: EB 5'-8'/WB 5'-8'		
TRAVELED WAY	: EB 24'-36'/WB 24'-48'	BIKEWAY	: N/A
OUTSIDE SHLDR	: EB 8'-10'/WB 8'-10'	PARKING	: N/A

TRAFFIC DATA				
		EXISTING	2015 NULL	2015 CONCEPT
ADT		159,000	176,000	207,000
PK HR	EB	7,180	7,730	9,530
	WB	6,680	7,130	8,890
LOS	EB	1.20/F0	1.29/F1	1.13/F0
	WB	1.11/F0	1.19/F0	1.11/F0
NUMBER OF LANES*	EB	3(1)	3(1)	3+1(1)
	WB	3(1)	3(1)	3+1(1)
ACCIDENT RATES PER MILLION VEHICLE MILES				
TASAS DATA: FROM 7-1-92 TO 6-30-95		ACTUAL		AVERAGE
		F+I/MVM	TOT/MVM	F+I/MVM
		0.18	0.91	0.43
				1.23

STATE ROUTE 22, SEGMENT # 5
POSTMILE: R10.48/R13.16
LIMITS: I-5/SR-22/SR-57 Interchange to SR-22/SR-55 Interchange



* Number of Lanes = Mixed Flow + HOV (Auxiliary)

APPENDIX 3

ACCIDENT RATES from TASAS Table B

SR-22

7/1/92 through 6/30/95

			ACTUAL			AVERAGE		
Segment	Postmile	Limits	FATAL	FATAL + INJURY	TOTAL	FATAL	FATAL + INJURY	TOTAL
1	LA 0.00/LA 1.14	SR-1 to Studebaker Road	.019	0.24	0.60	.014	1.09	2.40
2	LA 1.14/ORR R0.65	Studebaker Road to West Junction I-405	.015	0.22	0.85	.017	0.65	1.59
BREAK IN ROUTE (See I-405 RCR)								
3	R0.66/R4.81	East Junction I-405 to Magnolia Street	.002	0.24	0.79	.008	0.39	1.13
4	R4.81/R10.47	Magnolia Street to I-5/SR-22/SR-57 Interchange	.002	0.32	1.19	.009	0.46	1.36
5	R10.47/R13.16	I-5/SR-22/SR-57 Interchange to SR-22/SR-55 Interchange	.000	0.18	0.91	.009	0.43	1.23

* accident rates per million vehicles or per million vehicle miles from TASAS Table B

APPENDIX 4

Bikeway Classifications

- Class I Bikeway (Bike Path):** Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.
- Class II Bikeway (Bike Lane):** Provides a striped lane for one-way bike travel on a street or highway.
- Class III Bikeway (Bike Route):** Provides for shared use with pedestrians or motor vehicle traffic.

APPENDIX 5

New Technology

Intelligent Transportation System (ITS)

There are currently two pilot projects on-going in Orange County which may be considered as Intelligent Transportation System (ITS) projects. The first of these is the Mobile Video Surveillance and Communications Project. This project locates portable trailers at critical locations along the highway to monitor flow conditions on the mainline and interactively regulate on-ramp traffic flow. The second ITS project is the Integrated Freeway Ramp Meter/Arterial Adaptive Signal Control Project. This project will allow for the joint monitoring of the I-5 and I-405 interchange area and Alton Parkway by the District and City of Irvine. The intent of both of these projects is to apply several new technologies in an effort to optimize traffic flow.

Intelligent Vehicle Highway Systems (IVHS)

These systems utilize what is also commonly referred to as smart systems. There are three basic components necessary to implement a fully functional IVHS. These three are discussed below.

Advanced Traveler Information Systems (ATIS)

This type of system would provide the motorist with real-time traffic routing information. This information could be provided to the motorist using virtually any medium including television, radio, telephone and personal computer. Information could be routed to office, homes or even directly to an in-vehicle device.

Advanced Traffic Management Systems (ATMS)

These systems include the potential use of AVI (Automatic Vehicle Identification) systems and ATIS for electronic detection and interface with real-time TOS information. Other areas of research include bottleneck evaluations and the policies and procedures to be required for automated highway operation.

Automated Vehicle Control Systems (AVCS)

The greatest potential for improving highway safety within the IVHS technologies is the AVCS. These systems can electronically enhance or automate driving functions. There are two basic types of driving control offered for use of this new technology. First is the lateral control system which control vehicle steering, and the second is the longitudinal system which automates vehicle spacing, or the distance between vehicles. PATH (see below) is currently researching both types of driving control systems. It is anticipated that these systems are more long term innovations but do have a high potential for feasible implementation.

Showcase for IVHS - The Priority Corridor

The Priority Corridor proposal is an endeavor to demonstrate the actual full potential of the transportation network with all possible new technologies in place and integrated. This comprehensive and coordinated approach should reveal new capabilities of the transportation system. It is meant to serve as a living laboratory for new developments in transportation.

The Priority Corridor is geographically described as: bounded on the north by SR-126 and I-210; on the east by SR-71, I-15 and I-215; on the south by the U.S. border with Mexico, the Otay Mesa Border crossing and SR-905; and on the west by the Pacific Ocean. This corridor includes a myriad of intermodal systems for moving people and goods. It is also an air quality non-

attainment area and experiences severe congestion. The corridor is host to over half the population and jobs in California. It is being viewed as a Showcase for IVHS. This plan proposes to take full advantage of four Transportation Management Centers (TMCs), IVHS and Intermodal Transportation Management and Information System (ITMIS).

Consequently, the numerous and diverse difficulties experienced within the corridor are render it an ideal proving ground for new technology. These factors also provide an excellent opportunity to evaluate intermodal technologies, traffic management techniques, traveler information systems, passenger and fleet management systems, as well as freight vehicle control systems. Deployment and implementation of these different technologies will attempt to optimize and coordinate freeway and street operations with public and private transportation systems within the corridor. A cooperative effort among Caltrans, CHP, regional, county and city governments and the MPOs is essential to the success of priority Corridor operations.

New Technology Research and Development

Program on Advanced Technology for the Highway (PATH) is a program which has been established in cooperation with Caltrans and the California Institute of Transportation Studies. PATH researches new technologies such as warning and avoidance systems, electronic braking and the like. PATH also analyzes ATIS, IVHS and ATMS developments and gains discernment regarding costs and feasibility.

The District is committed to working with cities, the county, regional agencies, other state agencies, and academic institutions on the research, development and implementation of new technology in the development of our transportation system. The implementation of new technology is necessary to obtain optimum efficiency of our transportation system.

APPENDIX 6

Urban Freeway Standards

In April 1992, the Transportation Planning Branch completed a Traffic Operation Systems (TOS) Plan for District 12. The TOS Plan outlined the traffic system management elements required for efficient operation of the state highway system. The following is an excerpt from that report.

The goal of the Plan is to develop ultimate urban and regional freeways and highways, defined as transportation corridors, which have all system elements satisfied and will provide the following benefits:

- Operate the facilities at maximum efficiency
- Minimize and manage travel delay and congestion
- Disseminate motorist information using advanced technologies

The typical urban freeway operations plan includes:

- Electronic Loop Detectors
- Closed Circuit Television (CCTV)
- Changeable Message Signs (CMS)
- Highway Advisory Radio (HAR)
- Freeway Ramp Meters
- Communications System
- Traffic Management center (TMC)
- Major Incident Response Teams
- Motorist Call Boxes
- Freeway Service Patrols (FSP)
- Airborne Surveillance
- Smart Corridor Interface with Local Agencies
- High Occupancy Vehicle (HOV) facilities

Methods to achieve maximum efficiency on transportation facilities include: ramp metering, freeway incident detection and confirmation (CCTV surveillance, etc.), freeway incident response teams, and FSP. Methods to disseminate motorist information include provision of real-time information on traffic conditions to allow motorists to make informed route decisions by using CMS, HAR, In-Vehicle Navigation Systems and teletext services (Commuter TV). Management of data includes monitoring technologies such as loop detectors and CCTV.

The TOS Plan was updated by Traffic Operations in January 1994. This iteration of the TOS Plan refined definitions and uses of the various technologies outlined in the original report. More importantly, the updated version looked closer at actual implementation plans and schedules. Several TOS elements were identified as individual projects with identified funding and implementation schedules. Because of potential cost savings, several other projects were proposed to be included as an element of larger projects (widening/reconstruction, adding HOV lanes, etc.). However, in many cases, no funding was identified. And finally, several new projects were identified which neither had funding nor implementation schedules.

Full implementation of the TOS Plan elements is an integral part of this and all other freeway route concepts in Orange County. It is the goal of Caltrans District 12 to bring each freeway route in

Orange County up to urban freeway standards. It may be most cost effective to implement these items as part of larger projects in order to save on projects development and engineering costs.

New Technology

There are several elements of the existing and future transportation system which are referred to as "New Technology." It would also be appropriate to consider most of these elements as Traffic System Management (TSM) elements. Most of the above mentioned TOS elements take full advantage of new technology and these categories have a good deal of crossover application between them. In addition to the TOS elements mentioned above in the URBAN FREEWAY STANDARDS section, other New Technology programs are currently being implemented in Orange County, both on and off the State Highway System. See *Appendix 5 NEW TECHNOLOGY* for a brief outline of new technology programs and some implementation efforts currently underway in Orange County.

APPENDIX 7

References

Route Concept Report Route 22 (1986) Prepared by Caltrans District 7

Project Study Report Route 22 HOV and General Purpose Lane Improvements Final Report dated August 3, 1989.

Negative Declaration/Finding of No Significant Effect Route 55 Measure M Improvements From Route 22 to Route 91 - Caltrans, 1991

Orange County Master Plan of Arterial Highways

2020 Orange County Transportation Vision dated February 1994

OCTA Bus System Improvement Project Final Report dated March 1995

OCTA Transit Guide October 1995

Park and Ride Facilities, State of California Department of Transportation Division of Traffic Operations dated May 1994.

OCEMA Existing Bikeways Map (1992)

1992 Annual Average Daily Truck Traffic on the California State Highway System

Traffic Accident Surveillance and Analysis System (TASAS) 1995 Table B

Traffic Operation Systems Plan (4/92 and 1/94)

Transportation System Development Plan - District 12 (7/95)

1994 California State Highway Log - District 7 and District 12

Two-Tier State Highway System Proposal (1995)

ACRONYM GLOSSARY

ADT - Average Daily Traffic
ATMS - Advanced Traffic Management Systems
ATIS - Advanced Traveler Information Systems
AVCS - Automated Vehicle Control Systems
CCTV - Closed Circuit Television
CHP - California Highway Patrol
CMS - Changeable Message Sign
EB - Eastbound
ETC - Eastern Transportation Corridor
FTC - Foothill Transportation Corridor
FSP - Freeway Service Patrol
HAR - Highway Advisory Radio
HOT - High Occupancy Toll
HOV - High Occupancy Vehicle
ITS - Intelligent Transportation Systems
ITMIS - Intermodal Transportation Management and Information Systems
IVHS - Intelligent Vehicle Highway Systems
LA - Los Angeles
LARTS - Los Angeles Regional Transportation Study
LOS - Level of Service
LBT - Long Beach Transit
MIS - Major Investment Study
MPAH - Master Plan of Arterial Highways
MPO - Metropolitan Planning Organization
NHS - National Highway System
OCEMA - Orange County Environmental Management Agency
OCTA - Orange County Transportation Authority
OHC - Other Highway Construction
ORA - Orange County
PCH - Pacific Coast Highway
PM - Post Mile
PPN - Planning and Program Number
PSR - Project Study Report
RAS - Rehabilitate and Safety
RCR - Route Concept Report
RME - Regional Mobility Element
RTIP - Regional Transportation Improvement Program
SCAG - Southern California Association of Governments
SHELL - Subsystem of Highways for the movement of Extra Legal Loads
SHOPP - State Highway Operation and Protection Program
SJHTC - San Joaquin Hills Transportation Corridor
SR - State Route
STAA - Surface Transportation Assistance Act
STIP - State Transportation Improvement Program
TASAS - Traffic Accident Surveillance and Analysis System
TMC - Transportation Management Center
TOS - Transportation Operation System
TSM - Transportation System Management
UCI - University of California Irvine
WB - Westbound